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L4: Entry 1 of 1

File: USPT

Oct 12, 1982

DOCUMENT-IDENTIFIER: US 4353990 A

TITLE: Sanitation indicator

Abstract Text (1):

A device for monitoring thermal energy input and displaying the relationship of the thermal energy input to a selected time/temperature relationship. The device employs an indicating material which, when melted, expands and flows into a narrow channel to provide an irreversible, visible indication of the thermal energy to which the device has been exposed.

Brief Summary Text (6):

Conventional thermometers are not useful for this purpose since they do not indicate a time/temperature relationship and provide no irreversible record of the sanitizing activity. Sanitation indicators have been developed which employ indicating compounds having specific melting points. See, for example, U.S. Pat. No. 3,324,723. Other indicators have been developed which rely on a temperature accelerated chemical reaction to cause color change in an indicator. These devices are not useful to accurately reflect the thermal death curve for microorganisms. Yet another device has been described in U.S. Pat. No. 3,981,683, which employs an organic compound having a melting point slightly higher than the sterility temperature to be monitored. The device is constructed to allow steam to diffuse through the device and depress the melting point of the organic compound in order to reflect the contribution of humidity (steam) to the sanitizing conditions.

Brief Summary Text (9):

The energy monitors of the present invention comprise an indicating material having a selected melting point which, when melted, expands. The expansion of this indicating material is monitored to provide an irreversible indication of the thermal energy input to which the device has been exposed. A display means is provided to indicate the relationship of the thermal energy input to the energy level sufficient to kill selected microorganisms. In a preferred embodiment, the device comprises a body member and at least one fixed-volume reservoir cavity in the body member. The device further includes a display means remote from the reservoir cavity. The device has a fixed-volume flow channel connecting the reservoir cavity and the display means, the dimensions of the flow channel being such as to allow passage of liquid therethrough. The reservoir cavity is completely filled with a solid indicating material which is capable of changing to an expanded, liquid phase at a selected elevated temperature. Thus, the volume of the indicating material is a function of temperature. The quantity of indicating material and the expansion properties of the material must be such as to completely fill the reservoir cavity and flow channel when in the liquid state. The device also includes means for relieving pressure generated by expansion of the indicating material.

Brief Summary Text (11):

While the sanitation indicators of the present invention are described herein as being useful to monitor the sanitation cycles of commercial hot water dishwashers, these indicators can also be useful in monitoring various other heating cycles.

Typical examples of such use are the monitoring of the pasteurization cycles for beverages such as milk, wine, beer and fruit juices as well as the sterilization cycles for medical devices and even the laundering cycle for clothing and other fabrics.

Detailed Description Text (30):

The indicator prepared as described above exhibited a run-out time (i.e. the time required for the first color to appear on the display pad) of 55-70 seconds in a stirred water bath at 70 plus or minus 0.1.degree. C. with water flowing past the indicator at a rate of 0.65 feet/sec. (19.8 cm/sec). The time/temperature characteristics of this indicator are shown as curve "A" in FIG. 6. This curve closely approximates the sanitation curve (dashed line) which is acceptable as the standard. Thus, this device can be used to monitor the sanitation cycle in a dish washing machine. For example, the device is placed on a dish in a machine and the machine run through the sanitation cycle. If the required amounts of thermal energy has reached the dish the display portion of the indicator will register this condition. If insufficient heat has been applied the indicator material will not have reached the display area. The machine can then be adjusted to provide the necessary thermal input.

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L8: Entry 4 of 4

File: USPT

May 30, 1972

DOCUMENT-IDENTIFIER: US 3665770 A

TITLE: TEMPERATURE INDICATOR

Assignee Name (1):

Bio-Medical Sciences, Inc.

Assignee Group (1):

Bio-Medical Sciences, Inc. Fairfield NJ

Detailed Description Text (16):

In the embodiment shown in FIG. 6, a removable barrier 14 is interposed between the substances of mass 8 and the dye layer 10 to prevent molten substance from interacting with the dyestuff. This barrier has the effect of preventing premature, irreversible triggering of the thermometer. Such a barrier, in the form of a pull tab for example, can be removed just prior to use. When this barrier is employed, the fact that the substances may have melted and recrystallized prior to actual use will not adversely affect the operation of the thermometer.

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